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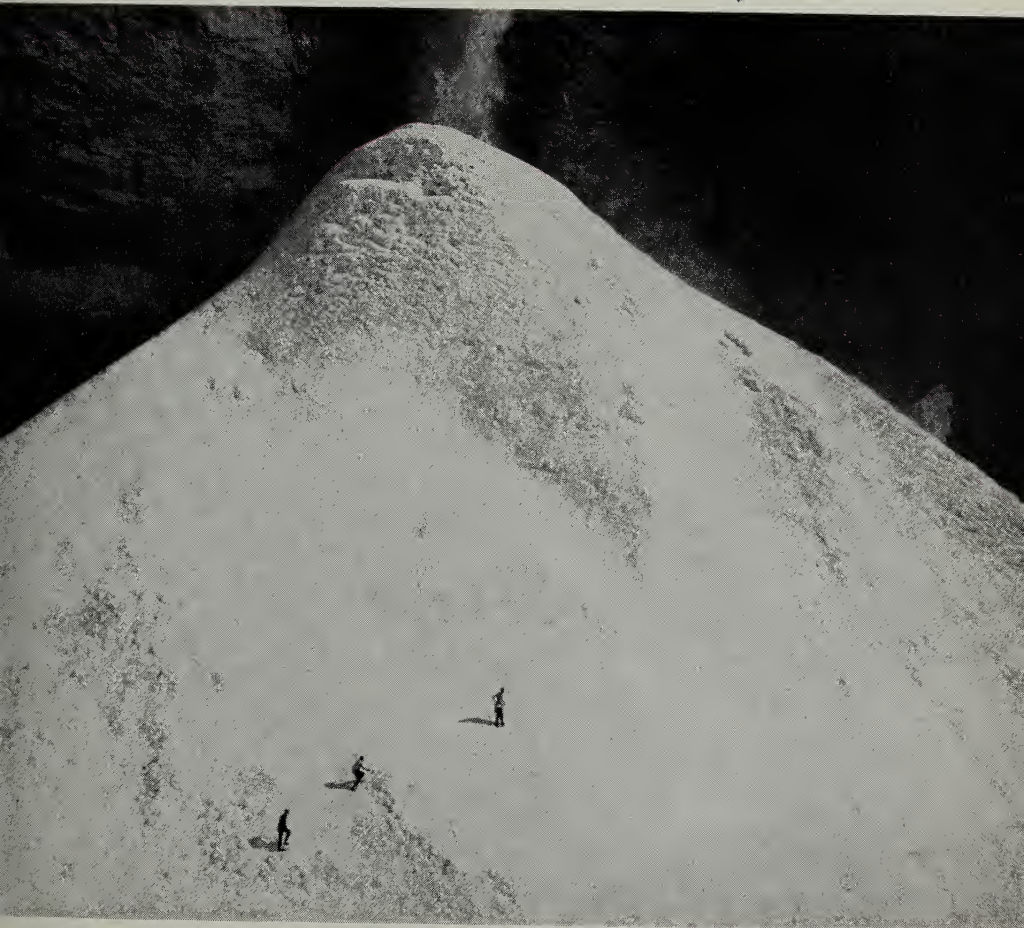
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YOSEMITE NATURE NOTES

VOLUME XXXIII • NUMBER 4

APRIL 1954

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*Climbers on the ice cone of Upper Yosemite Fall
—Ralph dePfyffer*



The Descent by Trail into Yosemite Valley
(From *Appleton's Weekly*, January 18, 1873)

Smillie

Yosemite Nature Notes

THE MONTHLY PUBLICATION OF

THE YOSEMITE NATURALIST DIVISION AND

THE YOSEMITE NATURAL HISTORY ASSOCIATION, INC.

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VOL. XXXIII

APRIL 1954

NO. 4

DOES IT PAY TO VISIT YOSEMITE?

By Olive Logan

EDITOR'S NOTE: This is the second of three parts of the article that was begun in our last issue. It is a reprint of an extraordinary narrative originally published 84 years ago in the magazine *Galaxy* for October 1870. The curious title has already taken on meaning for readers of Part I, who have followed the New York authoress and her companions on the first legs of a torturous journey from San Francisco to Yosemite in the days before any roads extended into the renowned valley. Part II finds the hapless travelers about to resume the bruising stage-coach ride that has brought them through the Sierran foothills on the Big Oak Flat Road.

Part II

At 10 o'clock on the night of the first day (having been jolted since 6 o'clock in the morning) we pulled up supperless at Garrote. Here, for the first time in the journey so far, we get food which is eatable, even palatable. The cook is a Chinaman, the landlady French, and the landlord a Boston man. "We must leave at 4 o'clock," the driver says, as we creep wearily and painfully to bed. "Oh, very well, just as you say; I'll get up at midnight if you desire it; *only*—I thought this was a pleasure trip."

These satires were uttered by the wag of our party, who fondly hoped—as did we all—that now we had got to a haven, we could at least have a full night's sleep there. What an insane belief this was we found out very thoroughly before the trip was over. The comfort of passengers is just the last thing considered on the Yo Semite journey. I

never was a galley slave, and have no very clear idea of what their special grievance is; but if they—or any other man—are or is treated worse than stage-drivers, landlords, horses, and coaches treat pleasure-seeking people *en route* to Yo Semite, all I can say is, Alas, poor Galley!

At 4 o'clock we were up and off. The only thing that was really and unmistakably delicious in all this trip was the morning air. O sweet pine breezes, how I wish I could have taken some of you home in my pocket, as school-children do lollipops from a party. O odorous atmosphere, how good you did smell! It is gratifying to me to remember that I sniffed up as much of you as I possibly could, and opened my mouth as wide as it would go, and swallowed you whole.

We left Garrote a mile or so behind, and until we reached Big Gap

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the road was endurable enough. This was lucky, because we were so sore and stiff from the previous day's ride that a repetition so early the next morning would have probably killed us. The young bride's waterfall, too, had acted yesterday in a very undignified manner from the merciless jolting it received. It wobbled and wiggled and shot off hair-pins, and finally settled, a sticky mass, somewhere in the region of her left ear. She giggled as it wiggled, and clapped her hand to her head and vowed that it was too bad! and that she was going to shave her head like the Chinese, you see if she didn't! But this was her honeymoon, you understand, when it is hard not to be looking one's prettiest. So out she came on the second morning still bearing the waterfall triumphant, though it flapped like a pendant flag through lack of the needful pins. Presently the road began to grow worse, then worse; then—"Oh, driver, stop! let me get out and walk! Oh, do go slowly!"—a chorus from inside. The brute, unmindful, tears madly on—jolting over rocks, goading his horses down the hollows only to run up the opposite side at an insane gallop, sending the battered inmates to the roof, where their heads are banged and beaten; around jutting and dangerous precipices, where one inch too near the edge will pitch the stage, crashing through pines, to destruction. One passenger—an interesting lumberman from Maine, whose fifteen years' exploits in California, as he related them to us, would make a curious and fascinating chapter—remembers when a stage did tip over from reckless driving. Not very long ago. Stage broken all to smash, and a lady killed. This is cheerful. Will it be likely to do so some more?

Not impossible. Bang! bang! over rocks and stones. Up we go to the roof, and then down we are crushed on the hard-as-iron seats. The bride from Chicago pays no more attention to her waterfall. Let it flap, let it fly, let it tumble off; she is reckless, poor soul, with suffering. Even yesterday her hysterical laughter as she was flung about the stage broke now and then into a shriek; but to-day it is the shriek without the laugh. She is in agony. Great black rings show themselves under her eyes, drops of cold sweat break out on her forehead, her hands nervously clutch the window straps; she supplicates with tears to be allowed to get out—to be left upon the road. She is sea-sick as well as sore, and in truth we are all in a pitiable plight, and nobody but ourselves, and other travelled monkeys who have endured this style of tail cutting, to blame for it. And only to think that the worst is yet to come. O Mrs. B., of Cambridge, Mass., no wonder you cried bitter tears! O distinguished Englishman at the Grand Hotel, in sooth it does not pay!

But this is premature. How do we know it does not pay? We have not seen the Valley yet. The Valley will repay us for all, the stage-driver says, as he stops to water his horses. This is the first sign of human feeling we have discovered in this brutal driver who took us from Chinese Camp to Hardin's. If this should meet the eye of the stage-driver with the long German name who drove us to Hardin's from Chinese Camp, he is requested to accept my compliments and those of the rest of the party in his coach, and the assurance that the universal verdict of all assembled was that he is the vilest brute that ever drove a horse.

During the respite afforded by the watering of the horses some good souls, who still entertain the fallacious idea that we shall be repaid for all when we get into the Valley, try to amuse the rest by relating threadbare stories similar to those in vogue at sea in like distressing circumstances. The standard joke at sea is the sailor's mock remedy for sea-sickness—the bit of pork tied to a string. The standard joke in the stage-coach is the anecdote about Mr. Greeley and Hank Monk the driver. Everybody has heard it; no matter, everybody must hear it again. Probably you, reader, have read it; be assured that trifling circumstance shall not deter me from relating it to you here.

To be brief, I will say that once upon a time Mr. Greeley set out for a trip over the mountains, having for driver a celebrated character, by name Hank Monk. Perfectly aware of the dreadful condition of the road over which they were travelling, this driver, with a consideration which his *confreres* would do well to employ, drove along for some miles at a slow and deliberate pace. Knowing that he had a lecture engagement to meet, Mr. Greeley called out to the driver that he should be glad to get on a little faster, as he had to be at a certain town at a certain hour. "Oh, very well," cried Hank Monk, firing off the pistol-shot in his whip-cord: "just keep your seat, Mr. Greeley, and I'll get you there in time." Off they flew at a thundering gait, rattling over the stones, bumping into ruts, while the unhappy Mr. Greeley was shaken about in the coach like an undignified inanimate object; his venerable spectacles broken, his revered hat thrown off his head, his white locks left waving in the dusty wind. In vain he cried for mercy; the die was

cast; Hank Monk was inexorable. "Keep your seat, Mr. Greeley," was his derisive shout; "I'll get you there in time." Whether alive or dead, he said not; and nearer dead than alive, he got him there in time.

This is the story in its simple form. It has variations, like a fantasia for pianoforte. One of the most incredible is that Mr. Greeley afterwards presented Hank Monk with a watch, with the famous but futile injunction inscribed upon it. Another and the most amusing is the recital of the change in deferential address which took place between driver and passenger by reason of this incident; for when the distinguished editor entered the stage he was "Mr. Greeley," with all honor from the driver, and the driver in turn was plain "Hank"; but when he got out the editor was plain "Horace" in a patronizing tone, and the driver was "Mr. Monk!"

But our horses have been watered long before this, and our tortures have again begun. Bang! bang! "Keep your seat, Mr. Greeley!" shouts the facetious-minded. And that of all things is just now the most impossible.

Hail, log cabin! Relief has come at last. Here is where we drop the stage, and take the horses. We have dinner here. This is Hodgden's. The three principal stations on this route form an unpleasant alliterative trio—Hardin's, Hodgden's, and Hutchings's. Fancy a Briton tackling all these at once. Perhaps that was the reason the distinguished Englishman—but no! he went the other way, with its "Mariposa," its "Hornitas," and other liquid Spanish stations. *Pardon, Monsieur l'Anglais.*

The dinner is execrable at Hodgden's. It is composed of salt beef, cold beans, watery potatoes, and boiling tea, as weak as hot. We pay

the same price for it, however, as we do for the delicious dinner at the Grand Hotel in "Frisco;" and indeed log-cabin accommodations in the mountains are more expensive (to tourists) than the finest quarters in yon city shut in behind its Golden Gate. And how we all wish we were there!

Dinner over, we mount our steeds—sorry brutes, who look at us with eyes of sullen reproach. I must confess they are badly treated. Not the slightest politeness is shown even the most aged of them.

At first the change from the stage to the horse is pleasant. At least you can now regulate your own miseries, and need no longer be a poor thing beaten and banded by a merciless stage-driver without remorse. This is your theory. It is groundless. Ferguson now takes the place of the stage-driver and becomes the Avenger. The reader will scarcely ask me who Ferguson the Avenger is. He is the guide.

Ferguson is a Mexican born in California, and as graceful and as handsome as a picture. No mistake about this. He'd be a fortune for a painter, with his tawny, smooth skin tingling with red on the cheeks, his scarlet lips, his white teeth, his profusion of blackest hair. His other name is Manuel, and he has never been away from these mountains. He has never seen a steamboat, nor a railroad, nor a city. He wants to do so very much. So do we all just at that minute.

Particularly the bride from Chicago. She moans, she weeps, she bends her poor battered head down upon the horse's neck for relief. Her waterfall is gone—wither we know not. On investigation we find Ferguson has it. It dropped off in the trail, and he thought her head was coming off, but picking it up found she

was only painlessly scalped. Without joking, this poor creature's condition is very alarming. We are afraid she will have to be left behind. Her husband is sick. Everybody is sick and sore. Poor idiots, wandering on horseback over these mountain fastnesses, we all get what we deserve for coming!

Ferguson does not want to alarm us, but says if we don't hurry up we won't get to Hamilton's (another HI!) at Tamarack Flat to-night. That will be bad, as there is not a single habitation between us and that place. To increase our discomforts, night falls early and a heavy mountain rain sets in. We are drenched and weary—oh, so weary! We let the reins fall over the horse's neck. He follows the trail of his own free-will, and has such an affectionate regard for the blazes, that he scrubs us up against the trees to our infinite discomfort. Another pleasing diversion takes place. Ferguson is driving a pack-mule heavily laden; and with the obstinacy of its race, every ten minutes or so it runs off and has to be followed on the keen gallop by Ferguson, hallooing and shouting, and using the rope about his horse's neck for a whip, driving it back into the path. All our horses being accustomed to drive mules, they all turn out and gallop after the offender, causing their weary riders to perform involuntary circus feats which bring tears to their eyes.

At Tamarack Flat the experienced Hamilton is ready—he is ready every time every saddle train arrives, for he knows the state the arrivers will be in—and he lifts the poor tourist-women off their horses. Our limbs are paralyzed. Some of us are barely alive; the bride from Chicago has swooned. The good wife Hamilton does all she can for us. She offers wine—she rubs us

with whiskey; and at last all of us—men, women, and children, married and unmarried, friends and total strangers—lie down in the one only room which composes their cabin, and pass the night in blissful disregard of civilization and modesty at once. *A propos*—lest the reader might forget it, I wish to again remind him here that this is a pleasure trip.

We are up betimes in the morning, and quaff again the delicious mountain air. Time to be off! The rumor is that we shall get to Hutchings's (in the Valley) at noon. Another episode. A rival Ferguson, runner for the other route and the other Valley hotel, makes us more unhappy than we have hitherto been by aspersions on the fair fame of Hutchings, the host of the hotel to which we are bound. Hutchings, according to Ferguson No. 2, is a villain who starves his guests, and puts them into beds already habited by another genus. The road over which we are to pass is more dangerous, rockier, more mountainous, more unendurable than any we have seen. These are reassuring tidings to people in our demoralized condition. Ferguson No. 1 denies the aspersions of No. 2, and together they have it hot and heavy. Mean-

time, to horse! There are only ten miles more of this torture left. At least so we are told by one party; another says there are fifteen. In San Francisco we were told that the whole distance on horseback (of which we have come already considerably more than ten miles) was but eighteen. Doctors and mountaineers disagree. At length an astute person settles it. "It may be eighteen miles measuring as the bird flies, but *as you don't go that way*, you'll find it's about double." No; not being birds, we don't go that way; that is, we are not birds unless geese are birds.

And now begins the weary trudge again. Oh, positively we shall never live through it. We are obliged to be lifted from our horses every two or three miles, and placed under the shade of trees to rest. The sun creeps higher and higher. It pours its burning rays upon our aching heads, for we are again mounted. The pack-mule runs away; we all run with unpleasant regularity after it, our horses trotting like trip-hammers, and beating the very breath out of our bodies. And so on and on we go. Eight miles! It is eighty! At length we reach the precipice which is to conduct us into the Valley.

(To be concluded in May issue)



YOSEMITE'S CURIOUS FRAZIL ICE

By Donald E. McHenry, Park Naturalist

Just about this time every spring the word gets around Yosemite Valley that the ice cone¹ at the base of Upper Yosemite Fall has "gone out." To the casual observer the "evidence" is quite clear in the mass of frothy ice in and along the channel of Yosemite Creek where it flows toward its junction with the Merced River. The rumor spreads quickly among the local inhabitants, for is not this a sure sign that winter is over?

This is a very natural misinterpretation of a phenomenon whose true story is actually more exciting, even though it may rob the event of its significance as a harbinger of spring. The white substance choking the creekbed is not the residue from a suddenly collapsed ice cone, but rather packed "frazil ice."

Frazil ice may be defined in simplest terms as a milky mixture of ice crystals and water. Its presence in the valley streams, though not uncommon and sometimes a nuisance, does occasionally assume dramatic proportions. Such was the case on Friday, April 10, 1953. Early in the day there was nothing spectacular about the scattered rafts of this mushy ice flowing half submerged in the waters of Yosemite Creek. By midday, however, more and more of these floating masses were crowding in on each other, pushing and shoving until the creek channel became jammed with the stuff, and forcing the excess over the banks and out across the adjacent portions of the Yosemite Creek delta. Soon the spur road to the base of Yosemite Falls was covered, and the snow-resembling

deposit was spreading eastward toward the fringe of the Government residential area and the utility yards of the Yosemite Park & Curry Co.

This frazil ice was a baffling aggregate of matter. It was hardly solid enough to manipulate successfully so that the streamcourse could be cleared, but at the same time it had enough consistency to block effectually the normal flow of the creek. This caused the water continually to dam itself and thereby shift its course this way and that, so suddenly that it was difficult to anticipate where it would flow next. Once the packed ice had lifted the creek out of its natural bed, it thereafter wandered at random over the upper fan of its delta, constantly laying down new frazil ice wherever it went. The stream carried within itself the means of its own diversion. To watch it was both fascinating and dangerous. A tongue of water might approach the observer, only to halt a few feet away while it paused to build yet another dam; after a few seconds of ominous quiet while the impounded water rose behind its barrier, it would suddenly burst forth with startling violence to proceed again in a new direction. The observer had better not be standing in this revised path!

Shortly after noon much of the flow of the creek was passing over the highway just west of the bridge, and was threatening some of the nearby homes of valley residents and cottages in the Yosemite Lodge area. Snowplows working up the spur road attempted with very little success to break a path through the 3-or-more-feet-deep frazil ice, but as

1. See C. A. Harwell's "The Ice Cone of Yosemite Falls," *Yosemite Nature Notes* 14(5):41-44, May 1935, and Sterling S. Cramer's "An Observation of the Yosemite Fall Ice Cone," *Yosemite Nature Notes* 31(5):50, May 1952.

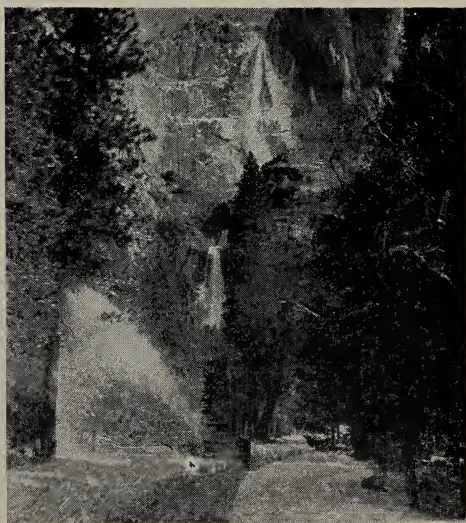
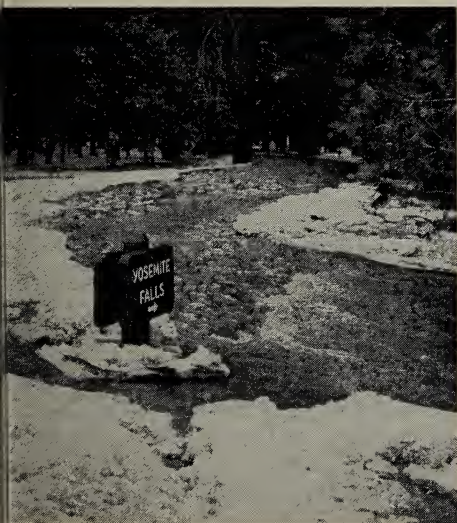
soon as one place was somewhat cleared the spongy substance quickly assembled elsewhere as the water shifted course almost in the twinkling of an eye. These shifts, whether control of them were attempted or not, were as uncanny as they were unpredictable.

Skirting the expanding carpet of ice, I tried to cross several intervening deposits of this frozen froth only to find that I would sink deep into it. Climbing up over the rocks I was finally able to reach a point near the Yosemite Falls view parking area, now completely covered. Here a strange thing was observed. For some reason a branch of the stream had compacted the frazil ice while still maintaining a channel along the top of the crest, so that a rather striking ice aquaduct about 4 feet high and several feet across had developed. In time even this was overwhelmed by the greater mass of ice which was increasing in volume.

By late afternoon the situation was reaching such alarming dimensions that it now became a problem

of saving property in the area. The footbridge alongside the Yosemite Creek highway bridge was lifted off its foundations by the packed frazil ice which threatened to carry it downstream. A trail bridge over the creek in the upper "Lost Arrow forest" was also dislodged, while a second one was completely destroyed. By this time an area of about 40 acres was deeply blanketed by the ice and water, and the main flow of Yosemite Creek was diverted away from the spur road eastward to the border of the utility area of the Yosemite Park & Curry Co.

This caused a portion of the creek to seek a route through this development, endangering the buildings and stored materials there. As evening approached, desperate attempts were made to deflect the flow back into its proper channel. Darkness was ushered in with the roar of bulldozers and the flashing lights of other heavy equipment as efforts were made to throw up earth and sandbag dikes. One caterpillar tractor sank deep in mud along the



Hubbard

(Left) Yosemite Creek running along the Yosemite Falls spur road due to diversion by frazil ice, April 10, 1953. (Right) Snowplow later clearing this road of the ice, which covered about 40 acres in all.

creekbank and had to be abandoned until the place was dry. It was not until much after dark that the struggle to control the situation was finally given up to await the following day.

Saturday morning's work was to be attended by tragedy. Shortly after daybreak crews were again laboring near the warehouses — machines snorting vigorously, men and cables straining. Someone conceived the idea that if a man were to get out near the main course of the creek by crossing the frazil ice on snowshoes, some more effective means might be found to clear it. The man who chose to make the try had gone but a short distance on this tricky surface when his snowshoes sank into the ice. Immediately the spongy mass closed over the snowshoes and he was trapped in icy water. Already greatly weakened through long hours of work, his futile efforts to extricate himself completely exhausted him. By ingenious methods fellow workers were able to rescue him and he was taken home, but there he suffered a severe heart attack which led to his retirement after a long siege of critical illness. A deer that had wandered into the frazil ice was not so fortunate. Though no one witnessed its dilemma, it was later found drowned, evidently having been trapped and subsequently becoming exhausted.

By Saturday noon the jam was finally broken through the use of a dragline, and the rushing waters swept the frazil ice along the channel to the Merced River. All this time a powerful marine pump was in operation at the mouth of Yosemite Creek, hosing water onto the packed ice to open it up, in hopes of relieving the pressure of the jam upstream.

Frazil ice is not peculiar to Yosemite Creek. It will be found under proper conditions in all streams coming from the various waterfalls leaping down the valley walls. Ribbon Creek usually presents such a display, though in much less quantity because of the minor size of its flow, and Bridalveil Creek may be expected to behave similarly. Frazil ice also appears in the Merced River itself, much to the consternation of those involved in the maintenance of the valley's domestic water and power systems.

Just what is the nature of this substance which acquires such importance in Yosemite Valley now and then? Frazil ice usually develops during periods of cold weather in the spring months, when the volume of streams is high and, therefore, turbulence of the water is relatively great. The phenomenon can be anticipated whenever a spell of mild spring weather — which causes snowpacks to melt rapidly and waterfalls to swell in volume — is suddenly broken by a sharp drop in temperature of the air. While the flow of the falls remains large, much of the spray freezes in descent, forming ice crystals. In the churning stream below the falls these crystals are carried under the surface and the entire body of water is converted into a mixture of ice and water. When the floating crystals touch any surface that has a temperature even a fraction of a degree below the freezing point—such as a submerged rock or bridge support or a formation of ice—the crystals instantly adhere and form a spongy, rapidly growing mass that can quickly choke even the largest waterway. Great turbulence, together with the rapidity of freezing, are the special conditions responsible for creating this behavior of

frazil ice.² Because these conditions are so well met in Yosemite's high waterfalls and climate, undoubtedly Yosemite Valley is one of the principal places in the world where the striking action of frazil ice can be observed.

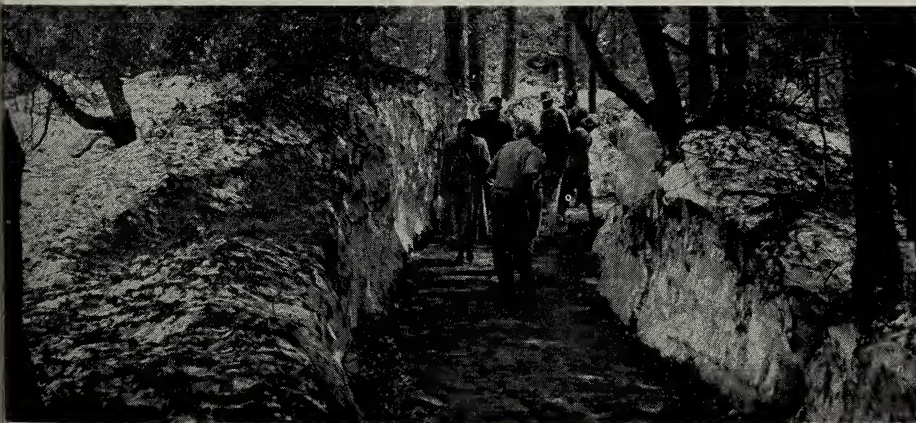
The frazil ice flow that has been described for April 10 last year was one of the heaviest on record. The stage was set for it by a warm spell in the early part of the month that brought Yosemite Falls up to booming volume, followed by a drop to temperatures of 24°, 23°, and 27° on April 8, 9, and 10, respectively. Two other flows occurred later in the season, reaching peaks on April 30 and May 9. On Friday, March 12 of this year, an impressive accumulation of frazil ice appeared once again on the Yosemite Creek delta. This time the mass was concentrated near the upper portion of the area, and reached greater depths—probably 15 to 20 feet. A good measuring stick was provided by the huge wooden footbridge that spans Yosemite Creek just below the lower fall: the flows of 1953 deposited much frazil ice beneath and over the

deck of this bridge but never quite succeeded in covering its railings; in March 1954 the bridge was so engulfed that no part of it was visible in the frozen white sea. The record of temperatures for this year's flow is as follows:

Date		Temperature (°F.)	
March	8	46	[Volume of Yosemite
"	9	45	Falls became high
"	10	40	during this period]
"	11	22	[Unusually abrupt drop]
"	12	20	[Flow reached peak]
"	13	25	

The ice cone of Upper Yosemite Fall does not suddenly break up and fill the stream with ice. Rather as warmer spring weather invades the valley the big ice cone almost imperceptibly disappears through a combination of melting and washing. Those who have jubilantly announced the passing of the rigors of winter when they observed ice clogging Yosemite Creek should know that this represents a fascinating phenomenon of unusual freezing conditions—the formation of frazil ice, not necessarily a harbinger of spring.

Walter J. Parsons, Jr., 1942. "The Evolution of Ice in Streams," *Physics of the Earth—IX: Hydrology*. McGraw-Hill Book Co., New York and London.



Bryant

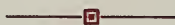
the path to the base of Yosemite Falls after it was cleared of frazil ice deposited on April 10, 1953. Photo taken a month later. The last of this ice, which might be mistaken for snow, did not melt away until June 15.



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